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(21) International Application Number: PCT/GB99/03538 (22) International Filing Date: 26 October 1999 (26.10.99) (30) Priority Data: 9823468.5 28 October 1998 (28.10.98) GB (71) Applicant (for all designated States except US): THE SECRETARY OF STATE FOR DEFENCE [GB/GB]; Defence Evaluation and Research Agency, Ively Road, Farnborough, Hampshire GU14 0XL (GB). (72) Inventors; and (75) Inventors/Applicants (for US only): / SQUIRRELL, David, James [GB/GB]; CBD, Porton Down, Salisbury, Wiltshire SP4 0JQ (GB); 2 MURPHY, Melenie, Jane [GB/GB]; CBD, Porton Down, Salisbury, Wiltshire SP4 0JQ (GB). 3 PRICE, Rachel, Louise [GB/GB]; CBD, Porton Down, Salisbury, Wiltshire SP4 0JQ (GB); 4 LOWE, Christopher, Robin [GB/GB]; Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge CB2 4AT (GB). 5 WHITE, Peter, John [GB/GB]; The Babraham Institute, Babraham Hall, Village of Babraham, Cambridge CB2 4AT (GB); 6 TISI, Laurence, Carlo [GB/GB]; Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge CB2 4AT (GB); 7 MURRAY, James, Augustus, Henry		[GB/GB]; Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge CB2 4AT (GB). (74) Agent: BOWDERY, A., O.; D/IPR, Formalities Section, Poplar 2, MOD Abbey Wood # 19, Bristol BS34 8JH (GB). (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. (88) Date of publication of the international search report: 3 August 2000 (03.08.00)	

(54) Title: MUTANT LUCIFERASE HAVING INCREASED THERMOSTABILITY

(57) Abstract

A protein having luciferase activity and at least 60 % similarity to luciferase from *Photinus pyralis*, *Luciola mingrelica*, *Luciola cruciata* or *Luciola lateralis*, *Hotaria paroula*, *Pyrophorus plagiophthalmus*, *Lampyris noctiluca*, *Pyrocoelia nayako* or *Photinus pennsylvanicus* wherein the sequence of the enzyme, at least one of (a) the amino acid residue corresponding to residue 214 in *Photinus pyralis* luciferase; (b) the amino acid residue corresponding to residue 232 in *Photinus pyralis* luciferase; (c) the amino acid residue corresponding to residue 295 in *Photinus pyralis* luciferase; (d) the amino acid residue corresponding to acid 14 of *Photinus pyralis* luciferase; (e) the amino acid residue corresponding to amino acid 35 of *Photinus pyralis* luciferase; (f) the amino acid residue corresponding to amino acid residue 105 of *Photinus pyralis* luciferase; (g) the amino acid residue corresponding to amino acid residue 234 of *Photinus pyralis* luciferase; (h) the amino acid residue corresponding to amino acid residue 420 of *Photinus pyralis* luciferase; (i) the amino acid residue corresponding to amino acid residue 310 of *Photinus pyralis* luciferase; is different to the amino acid which appears in the corresponding wild type sequence and wherein the luciferase enzyme has increased thermostability as compared to an enzyme having the amino acid of the corresponding wild-type luciferase at this position.

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